App Analytics

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What are Analytics?

- The data-driven evaluation of user patterns
- Data points collected based on app usage
- Data analyzed using statistics
- Results visualized for human consideration
- App patched to better serve market

iTunes Connect

- iTunes Connect provides basic analytics for all apps
  - Store views
  - Units sold
  - Active devices
  - In-app purchases
  - Crashes
- Users must opt-in for some of this shared data

Apple's App Analytics

- Data organized by:
  - App
  - Specified time period
  - Country / Region

iTunes Connect App Analytics

Tide Minder

Overview | Metrics | Sources | Retention

About App Analytics Data

All Time

12,468,565	1,316,197	$8,582,874	323,397,899
App Store Views	App Units	Sales	Sessions Opt-in Only

Last 30 Days

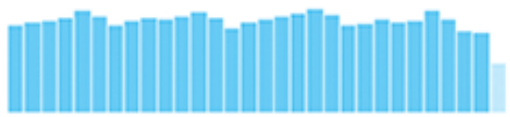
217,450
App Store Views ▼ 9%

20,112
App Units ▼ 22%

24,590
In-App Purchases ▼ 19%

872 (Daily Average)
Paying Users ▼ 19%

$278,596
Sales ▼ 14%



7,794,708
Sessions
Opt-in Only ▲ 2%

195,289
Active Devices
Opt-in Only ▼ 1%

40,330
Crashes
Opt-in Only ▼ 27%

App Units by Territory

20.1K
United States

Goals of Analytics

- Improve user experience
- Provide better marketability
- Increase profitability
- Two main metrics of success:
  - Conversion
  - Retention

Conversion

- How many people who know about the app decide to use the app?

- Analyzes user perception of app before purchase/ download

  - Associated an app's "marketability"

- Marketing campaigns (paid advertisements or social media) can increase conversion

Conversion Metrics

- What data points might be associated with user conversion?
- Data points:
  - Product page views counts store page views
  - Impressions counts views for more than one second from any source (includes search results, featured apps etc)
  - App units sold/downloaded
  - Number of app installations

Retention

- Does the app's user base continue to use the app?
- More critical than the initial conversion!
  - "Word of mouth" is the best publicity
  - Defines reputation of both app and studio
- Good customer service, quickly addressing problems, and customer trust can increase retention

Retention Metrics

- What data points are associated with user retention?
- Data points:
  - Active devices
  - Active within last 30 days
  - Crashes
  - In-app purchases
  - Sessions

Additional Data

- General app data is only the start!
- Important to capture data related to app specific features
  - What features are most popular?
  - Where in the process are users stopping?
- Information often gathered from backend requests
  - API calls can log user data for internal analytics

Using Data

- Data doesn't say much about why — only what

- Humans use data to form hypotheses about why trends are happening

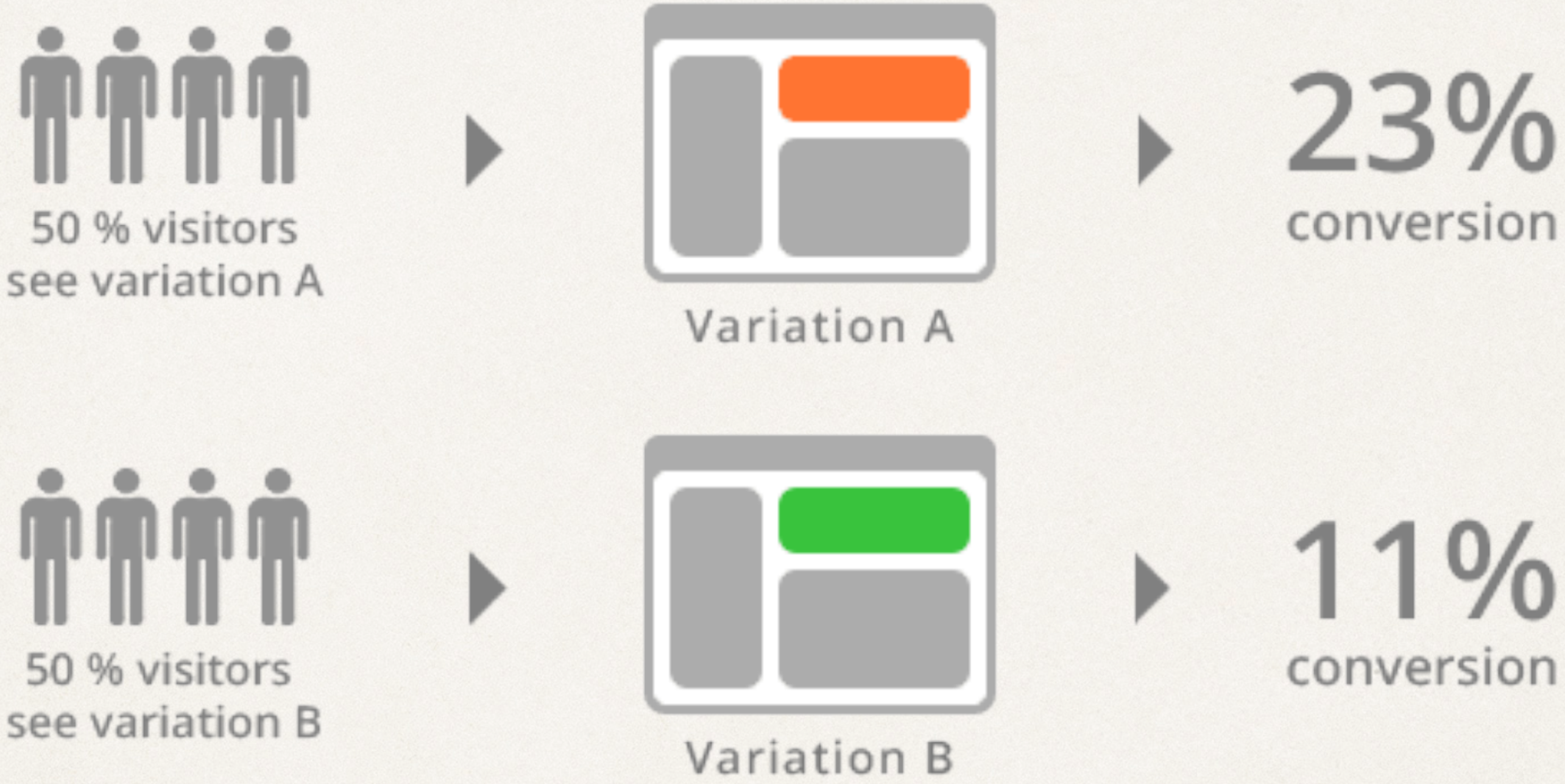
- Still necessary to test trends in some statistically reasonable way

A/B Testing

- Also called split-testing
- Compare two versions of a product across multiple users
- Formalizes design decisions using actual data
- Possible to test even after deployment
- Can test for conversion or retention

How to A/B Test

1. Form a hypothesis about how to improve an app feature or process
    - Potential changes might be cosmetic, interaction flow, or entire features
2. Create variation incorporating hypothesized changes to test against the control (current version)
3. Deploy app versions at random across user base
    - User does not know about the testing — only sees their “A” or “B” version of the app
4. Validate user interactions between two versions using statistical analysis


50 % visitors
see variation A
Variation A
23%
conversion
50 % visitors
see variation B
Variation B
11%
conversion

A/B Test Example: EA

Control: 20% off future purchases

A/B Test Example: EA

Variant: No pre-order incentive

Variant or Control?

- Variant (no pre-order incentive) performed over 40% better than control (pre-order incentive)

- Why?

A/B Test Example: WallMonkeys

Control: original landing page

A/B Test Example: WallMonkeys

Heatmap analysis of user interactions

A/B Test Example: WallMonkeys

Variant 1: New background image

A/B Test Example: WallMonkeys

Variant 2: Updated menus and search bar

WallMonkeys Results

- Variant 1 increased conversion rate over control by 27%

- Variant 2 increased conversion rate over Variant 1 by 550%

Typical Areas of A/B Testing

- Sign-up and login flow
- Tutorials
- Visual appearance (color, size, shape, etc)

A/B Testing on Mobile

- Many services available for performing tests and app updates without resubmitting to the App Store
  - Optimizely
  - Leanplum
  - Taplytics
  - Apptimize
- Note: these tools primarily target “standard” app features such as UI/UX decisions and push notification/messaging etc

Testing Other Features

- Ongoing A/B testing works well for many web/mobile apps
- Less feasible in products like games, where “fun” and engagement are harder to define
  - Scaling of level difficulty
  - Introduction of new mechanics
  - Level/puzzle/boss design

How Can We Test These Things?

- Early play tests essential for guiding design
- Data collection of player usage can guide where fixes are necessary
- A too-hard boss fight will lead to drop off in player base for following level
- Preferred levels will be selected more frequently
- Crash reports can help find bugs in levels

Example: Borderlands

Fixing Bugs and Adding Features

- Player data helps determine priority and severity of bugs and priority of features
  - Priority: How essential it is to fix or add something
  - Severity: How damaging a bug is
- Helps programmers “rank” what they should be working on

Priority vs Severity

- What is a high-priority / high-severity issue?
- What is a low-priority / low-severity issue?
- What is a high-priority / low-severity issue?
- What is a low-priority / high-severity issue?

Is Profit the Point of Data?

- Companies use data to increase profits, which is not necessarily harmful…
  - …but could result in treating customers as a means to an end
- Data goes beyond profits and consumerism
  - Drives safety, convenience, education, happiness etc
- Consider what your app is *giving* users
  - If it's giving something of value, you'll get something back

Quiz Question!

- True or False (A or B): Conversion metrics include data points like crash rate and number of user sessions.

References

- <https://www.crazyegg.com/blog/ab-testing-examples/>

- <https://www.raywenderlich.com/215-firebase-tutorial-ios-a-b-testing>